Illinois River Watershed
Total Phosphorus Criterion Revision

Chapter 45 & 46 Proposed Rules

Board Meeting

February 16, 2021

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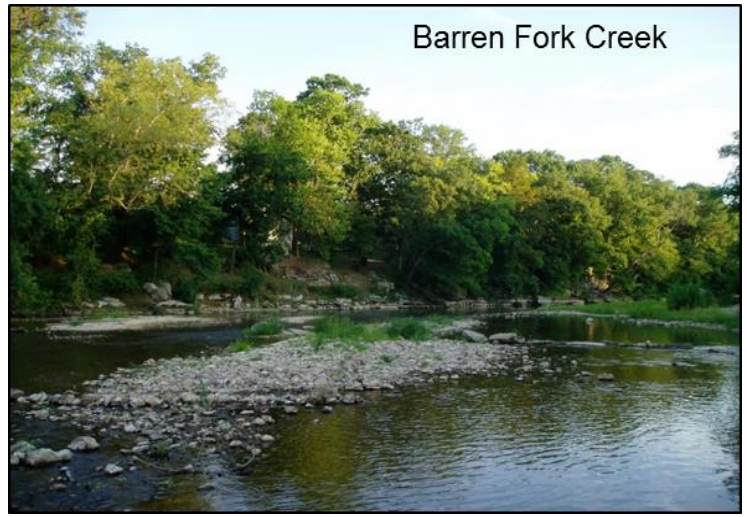
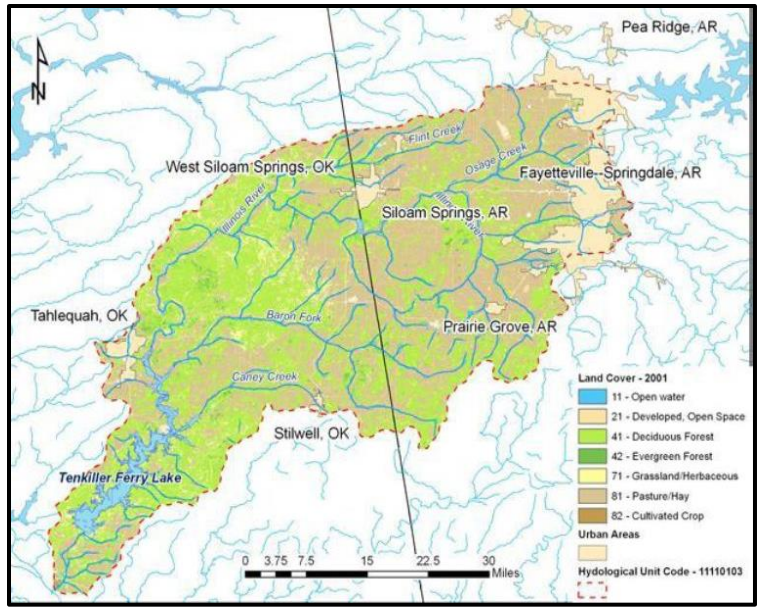
Outline

- Introduction
- Chapter 45 Proposed Rules
  - Total phosphorus criterion
- Chapter 46 Proposed Rules
  - Critical condition
  - Calculating 6-month average
  - Beneficial use assessment

Illinois River Watershed





Scenic Rivers

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Beneficial Uses

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Aesthetic Beneficial Use

Illinois River at Watts

History: Total Phosphorus Criterion

2002 — Scenic River TP Criterion Adopted

- 0.037 mg/L, 30-day geo-mean

2003 — 1st Statement of Joint Principles

- OK & AR agreed to coordinated, but individual state actions to reduce phosphorus

2012 — Re-evaluation TP Criterion

- Technical re-evaluation of phosphorus criterion
- Technical Advisory Group (TAG), OK confirmed the Scenic River TP criterion
- AR TAG members drafted minority report

2013 — 2nd Statement of Joint Principals

- Reconcile differences regarding TAG findings
- Formed Joint Study Committee
- Special Study on phosphorus & algae growth conducted

2018 — MOA

- OK & AR working together on various actions to improve water quality

2013 Second Statement of Joint Principals

Formed 6-person Joint Study Committee

Responsible for overseeing study on phosphorus & algae

June 2014 - April 2016, Ryan King with Baylor University conducted study

December 2016, Committee Final Report & Recommendations accepted by both state Governors

2020-2021 OWRB rulemaking is an outgrowth of committee recommendations

Joint Committee Recommendation

Committee Recommendation	Related WQ Program	Rule Chapter
A six-month average total phosphorus level not to exceed 0.035 mg/L	Water Quality Criteria	Chapter 45 (Water Quality Standards)
based on water samples taken during the CRITICAL CONDITION	Water Quality Monitoring	Chapter 46 (Implementation of Water Quality Standards)

Chapter 45: Water Quality Criteria

Current Criterion

- **Magnitude**
  - 0.037 mg/L
- **Duration**
  - 30 day geometric mean
- **Frequency**
  - Never to exceed

Revised Criterion

- **Magnitude**
  - 0.037 mg/L
- **Duration**
  - Rolling 6-month average
- **Frequency**
  - No more than 1 exceedance per 1-year period
  - No more than 3 exceedances per 5-year period

Chapter 45: Proposed Criterion

The total phosphorus **six month rolling average** of **0.037 mg/L** shall not be exceeded more than **once in a one-year period** and not more than **three times in a five-year period**.

Chapter 46: Critical Condition

- Joint Committee definition

  "the conditions where surface runoff is not the dominant influence of total flow and stream ecosystem processes."

- Staff analyses served to create operational definition for implementation
  1. Hydrology total flow analysis
  2. Hydrology scour analysis

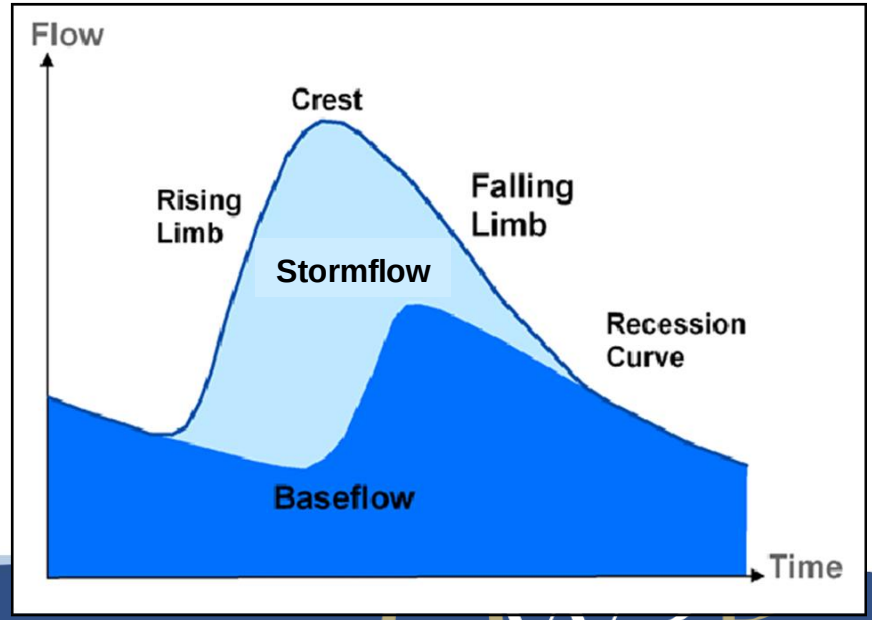
Chapter 46: Critical Condition

1. Total Flow

When is surface runoff dominant and when is it not dominant?

Hydrograph separation analysis to evaluate flow conditions

- Effectively & efficiently identify surface runoff versus baseflow conditions
- Utilized USGS gages throughout watershed
- Consistent approach applicable watershed wide



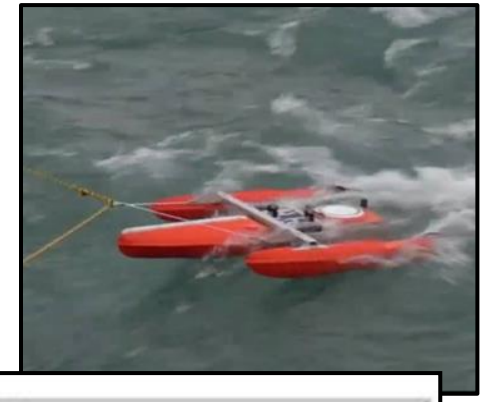
Chapter 46: Critical Condition

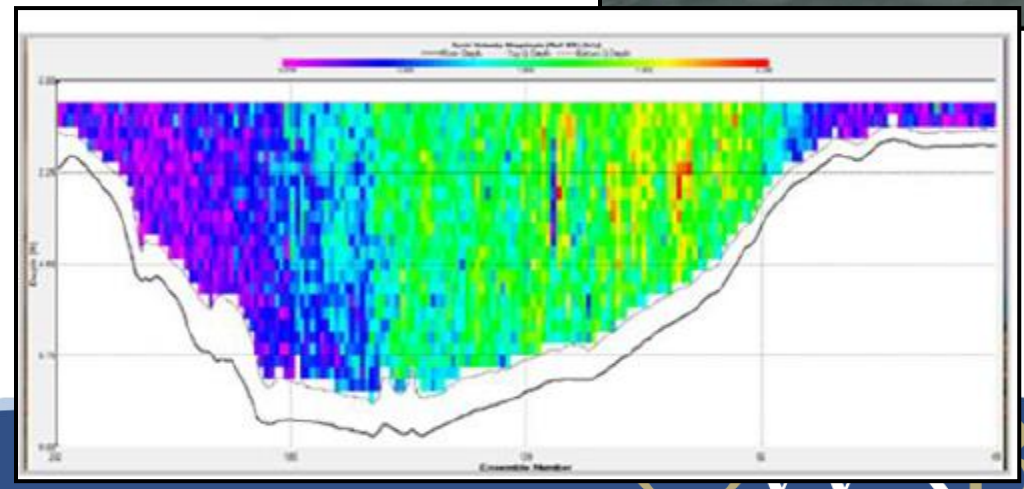
2. Stream Ecosystem Processes

When does flow dominate ecosystem process of interest (benthic algal growth)?

Hydrology scour analysis

- Results very dynamic and highly variable
- Not consistent across watershed
- Analysis very labor intensive
- Not effective for operational definition





Chapter 46: Proposed Critical Condition Definition

The critical condition is when baseflow is fifty-five (55%) or greater of the total daily average flow calculated by the USGS hydrograph separation method sliding-interval.

Chapter 46: 6-month Average Calculation

- How many measured TP values required for each rolling 6-month average?
- Reviewed monitoring programs, found that at least 80% of time at least 1 measured TP value available per month

2 Considerations

1. Monitoring programs need some flexibility, no program is perfect
2. Maximize the number of monthly 6-month averages calculated each year

Chapter 46: Proposed 6-month Average Calculation

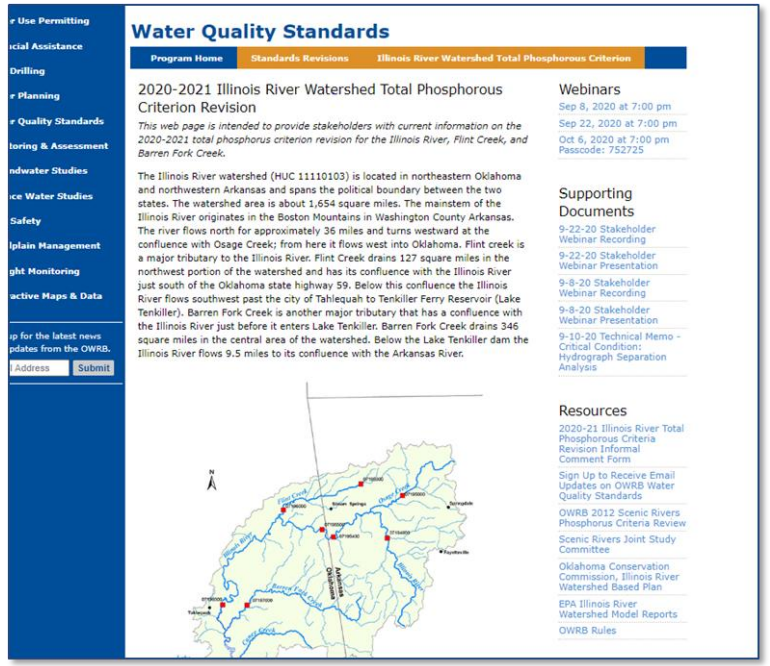
The calculation of a rolling 6-month average must include at least four (4) measured values from four separate months.

Chapter 46: Proposed Beneficial Use Assessment

- **Direct implementation of criterion frequency**
  - 1-year
    - No More than 1 exceedance per 1-year period
  - 5-year
    - No More than 3 exceedances per 5-year period
- **Minimum number of samples required**
  - 10 for 1-year period & 30 for 5-year period
  - Consistent with other USAP sample requirements

Stakeholder Outreach

- **Project specific website**
- **Public Webinars**
  - 3 evening webinars in Sept & Oct
  - 40 – 45 participants each
- **Targeted Stakeholder Meetings**
  - OK Ag Stakeholders
  - OK Environmental Stakeholders
  - NW Arkansas Stakeholders



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Stakeholder Outreach

- **Common Topics of Concern**
  1. Concerns regarding critical condition term & P-loading during storm events
  2. Desire for critical condition baseflow threshold to be greater
  3. Significant concern regarding ongoing pollution in the watershed
  4. Desire more implementation actions & enforcement
  5. Downstream protection of Lake Tenkiller

Questions

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Illinois River at Tahlequah